An efficient strategy to decrease the catheter-related adverse events rate.

Access for Hemodialysis
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Introduction

- Central venous catheters (CVC) represent 15% of hemodialysis permanent vascular access in France.
- Catheter-related infections (CRI) remain a major cause of mortality and morbidity.
- CVC had been associated to the risk of central venous stenosis and thrombosis.
- CVC material has improved with more biocompatible devices ?
- We aimed at comparing the CVC prevalence and adverse events rate at 10 years interval using different devices in one centre.

Material and methods

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- We compared 2 periods:
  - from 1994 to 1997 (Period 1)
  - from 2004 to 2007 (Period 2).
- We recorded all prevalent tunnelled jugular CVC and their related adverse events rate:
  - Bacteraemia (CRB),
  - Local infection (CLI, exit-site or tunnelitis),
  - Dysfunction leading to an exchange
  - Extrusion.

Methods 2

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- CVC were inserted under surgical conditions using percutaneous device under local anaesthesia.
- Dressing was made by 1 nurse at each dialysis session.

Results 1

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- The same 2 senior nephrologists performed all the CVC insertions
- In the period 2, creating more native AV-fistulas was advocated, especially using superficialised basilic vein (8% of vascular access) or heterologous venous graft (2%).
- Nephrologists performed all native AV-fistulas.

Results 2

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- In period 1, were used :
  - PermCath cuffed catheter (Quinton®) n=63
  - Twincath double non-cuffed catheter (Canaud, MedComp®) n=76
- In period 2, were used:
  - BioFlex cuffed double catheter (MedComp ®) n=46
  - ASPC cuffed split catheter (AshSplit, MedComp®) n=52

Catheters devices evolution

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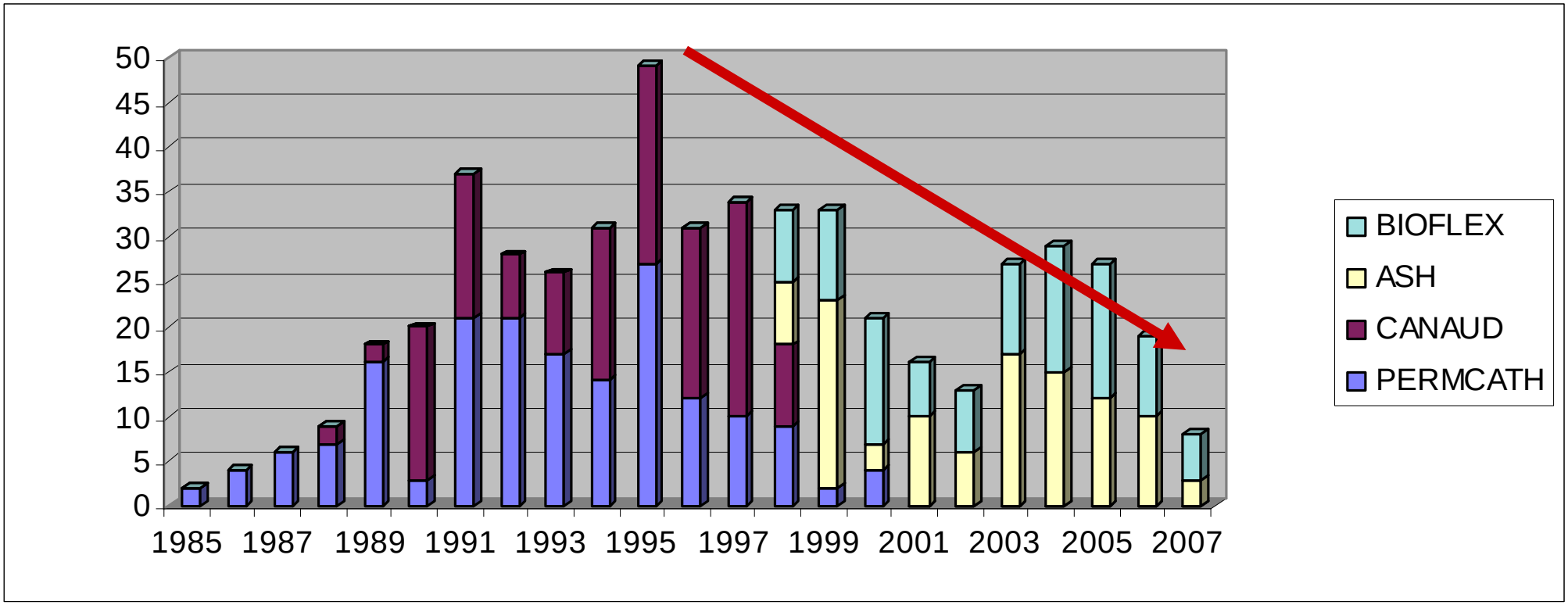

Shortening the period of catheter use

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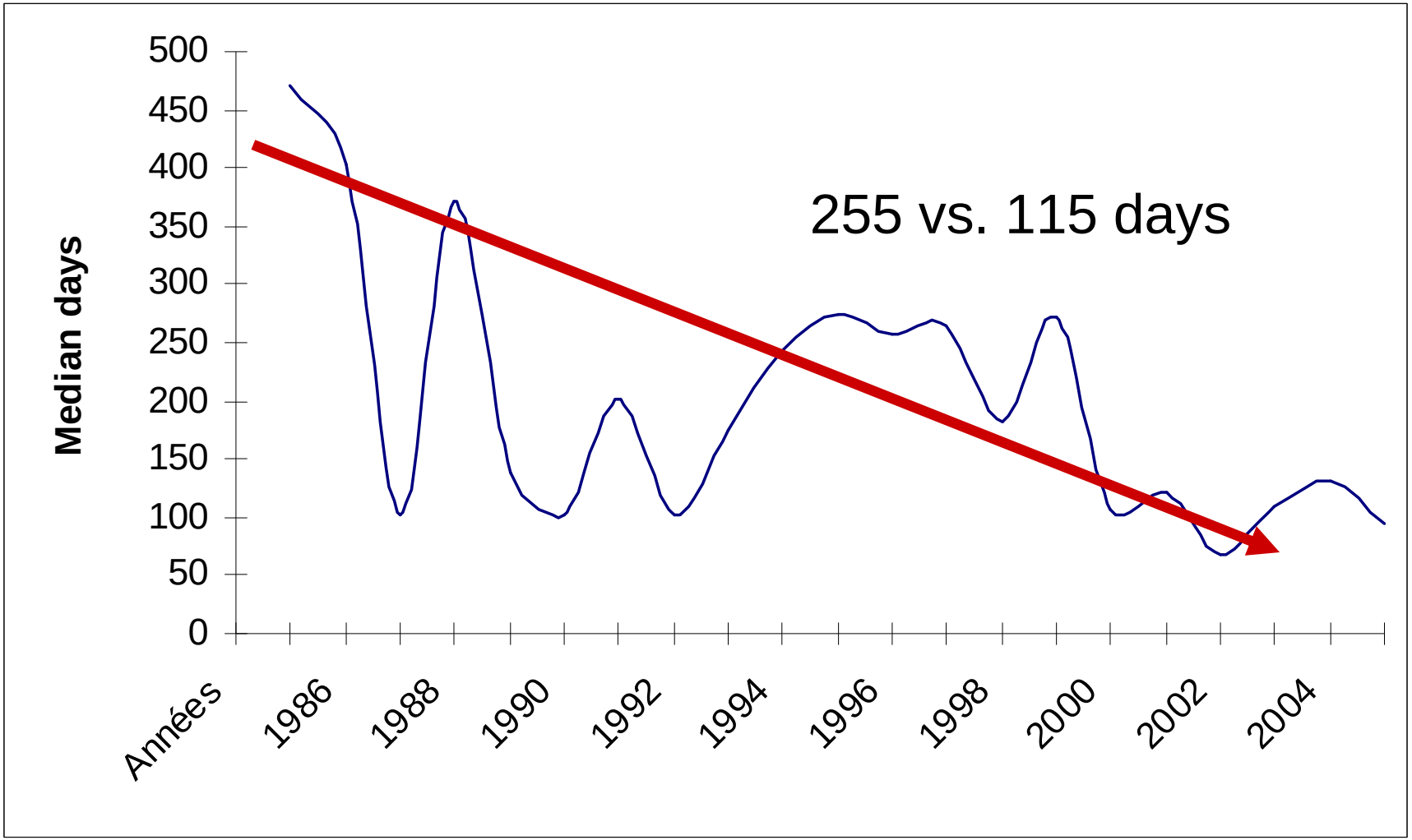

Results 3

- In period 1 we performed CVC dressing using **povidone iodine** vs. **chlorexidine** in period 2.
- The prevalent hemodialysis population remains stable between the 2 periods (n= 260)
- Diabetes incidence increased (22 vs. 51% $p<0.01$) in catheter users.
- Dialysis vintage decreased (63 ± 89 vs. 35 ± 60 months, $p<0.05$).
- Mean age remained stable (65 ± 12 years) as male proportion (55%).

Results 4

Table 1: comparison between the 2 periods.

	CVC prevalence	Bacteraemia /1000 catheter-days	Local infection /1000 catheter-days	CVC dysfunction	CVC extrusion
94-97	15-18%	1.1	1.1	12%	4%
04-07	9-6% **	0.16 **	0.2 **	1.2% **	0% *

* p<0.05, ** p< 0.001

Discussion

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- Since ten years, this study shows the dramatic decrease in:
  - **CVC prevalence (-50%)**
  - **CVC-related adverse events rate (@ -200%)**
- A global vascular access **strategy favouring native AV-fistulas** made by nephrologists lead us to progressively **abandon CVC for long term** use except in few difficult cases.
- Switching **povidone iodine** for **chlorexidine** and using **more recent CVC devices** may play a role in decreasing CVC-related adverse events.

Conclusion

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- Decreasing the catheter's need is possible dependant on the surgeon team motivation (nephrologist).
- This allow for a significant decrease in catheter-related adverse events.
- But may lead to increase the AV-Fistula-related problems in some patients.

Are we transferring the problems?

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We need to assess this hypothesis